

REMARKS

Amendments to claims 56 and 103 are to incorporate limitations from respective canceled claims 93 and 104. No new matter has been added.

I. Claim rejections under 35 U.S.C. § 102.

Claims 56, 61-63, 66-67, 81, 93, and 103-104 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 7,006,862 (Kaufman). Applicant respectfully notes that in order to sustain a claim rejection under § 102, each of the claim elements must be found, either expressly or inherently, in the cited reference.

Claims 56 and 103

Claim 56 recites that the image data corresponds with a phase value of a *breathing cycle* (Emphasis Added). Claim 103 recites similar limitations. Kaufman also does not disclose or suggest the above limitations. In particular, the system of Kaufman is specifically designed to deal with heart motion, not breathing motion. This is supported by the Examiner's characterization on page 4 of the Office Action, which states "the method of Kaufman et al. is specific to synchronizing with respect to phases of the *cardiac cycle*. . ." (Emphasis Added). Thus, there is nothing in Kaufman that discloses or suggests any breathing cycle.

Notably, Kaufman discloses *breath holding* (see column 5, lines 51-54, and column 3, lines 5-12, where Kaufman teaches a technique for dealing with irregular heartbeat due to breath holding). Therefore, Kaufman clearly does not disclose or suggest any breathing, much less a breathing cycle, and in fact teaches away from such. For at least the foregoing reasons, claims 56 and 103, and their respective dependent claims, should be allowable over Kaufman.

Claim 56 also recites that the image phase value is *calculated using the phase value of the breathing cycle* (Emphasis Added). Claim 103 recites similar limitations. Kaufman also does not disclose or suggest these limitations. As discussed, Kaufman does not disclose or suggest any breathing cycle, and thus, Kaufman certainly also does not disclose or suggest any calculation that is performed using a breathing cycle phase value.

According to the Office Action, column 16, lines 38-43 and 54-67 of Kaufman allegedly disclose calculating an image phase value using the phase value of the breathing cycle. However, these cited passages actually disclose:

From the Fourier transformation, the software can determine the fundamental frequency of the heart and generate images of the heart in different phases of the heart cycle. As will be described below, the user can display a plurality of projection images of the heart, in which each of the images corresponds to a different phase of the heart cycle.

To determine the phase of each of the slices, (e.g., to determine which slices correspond to diastole), a local intensity signal of the slice images can be run through a derivative filter to produce a graph such as FIG. 13. Generally, this method can be used in conjunction with the results from Fourier analysis, as described above, to find the size of the heart in each of the slice images. With the frequency derived from Fourier analysis and phase from the local maxima, slice selection can be extended beyond the ROI of Step 206. It should be appreciated however, that it may be possible to use the local intensity profile as an independent algorithm. In such embodiments, the user would need to cover all slices with the selected region of Step 206.

Based on the above evidence, Kaufman clearly does not disclose or suggest any *breathing cycle*, nor does Kaufman disclose or suggest *calculating* an image phase value *using any breathing cycle phase value*.

For the sake of argument, even assuming that the cardiac cycle of Kaufman is somehow a breathing cycle (which is clearly incorrect), Kaufman still does not disclose or suggest

calculating an image phase value using a cardiac/breathing cycle phase value. As evidenced from the above cited passages of Kaufman, Kaufman teaches determining a phase of a heart cycle (cardiac cycle phase value), and uses such phase value itself as the phase for the image slice. However, once the cardiac cycle phase value is determined, Kaufman does not disclose or suggest performing any *calculation* using the determined cardiac cycle phase value to determine another variable (i.e., to determine the claimed “image phase value”). This is because in Kaufman, the determined cardiac cycle phase value itself is the phase for the image, and therefore, Kaufman clearly does not disclose or suggest *calculating* an image phase *using the cardiac/breathing cycle phase value*.

Furthermore, to the extent that the Examiner is considering the “phase” of the image slice (in column 16, line 54 of Kaufman) to be the claimed “image phase value”, Kaufman still does not disclose or suggest the above limitations. This is because claim 56 requires that the “image phase value” be *calculated using the breathing cycle phase value*. On the other hand, the “phase” of the image slice in Kaufman is itself the cardiac cycle phase value. Thus, the phase of the image slice in Kaufman is clearly not *calculated* using the cardiac cycle phase value, and is certainly not calculated using any *breathing cycle* phase value.

For these additional reasons, claims 56 and 103, and their respective dependent claims, should be allowable over Kaufman.

CONCLUSION

If the Examiner has any questions or comments, please contact the undersigned at the number listed below.

To the extent that any arguments and disclaimers were presented to distinguish prior art, or for other reasons substantially related to patentability, during the prosecution of any and all parent and related application(s)/patent(s), Applicant(s) hereby explicitly retracts and rescinds any and all such arguments and disclaimers, and respectfully requests that the Examiner re-visit the prior art that such arguments and disclaimers were made to avoid.

The Commissioner is authorized to charge any fees due in connection with the filing of this document to Vista IP Law Group's Deposit Account No. **50-1105**, referencing billing number **VM 03-035-US**. The Commissioner is authorized to credit any overpayment or to charge any underpayment to Vista IP Law Group's Deposit Account No. **50-1105**, referencing billing number **VM 03-035-US**.

Respectfully submitted,

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